

ABSTRACT

A method of cleaning semiconductor substrate
conductive layer surface which can remove a residual organic
5 material and a natural oxide satisfactorily and does not
adversely affect a k value without damaging the side-wall
insulation film of a via hole. A semiconductor device,
comprising insulation films (2, 3) formed on the surface of
the conductive layer (1) of a semiconductor substrate and a
10 via hole (4) formed in the insulation film (3) to partly
expose the conductive layer (1), is carried into a reaction
vessel, plasma including hydrogen is generated in the
reaction vessel to clean the surface of the conductive layer
(1) at the bottom of the via hole (4), a residual organic
15 material (6) is decomposed and removed by ashing, and a
copper oxide film (7) on the surface of the conductive layer
(1) is reduced to Cu.